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THE

United States Patent System.

BY

JAMES SHEPARD.

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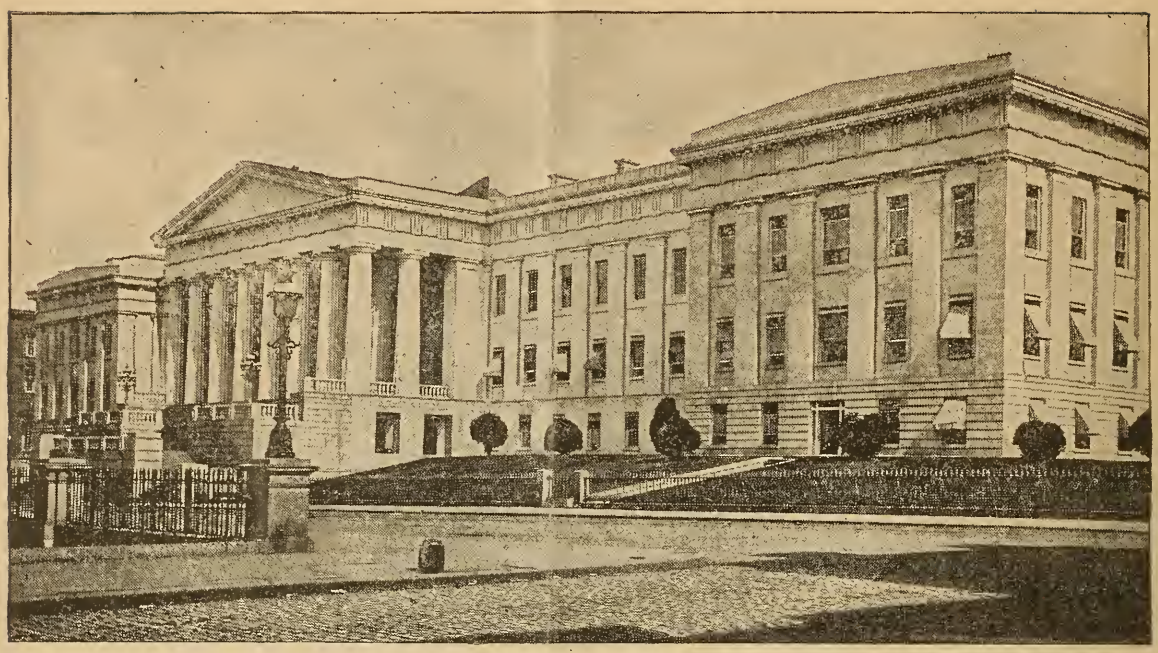
THE UNITED STATES PATENT SYSTEM.

By James Shepard.

EVERY person has an obvious right to the products of his own mind, and consequently a right to his inventions. No one could know of the existence of an invention, until after the inventor voluntary revealed it, either by disclosing it to others or putting it into some tangible form. But in the absence of special laws, how can the inventor protect himself in this right? If he attempts to use his invention for himself only, he will in doing this disclose it to others; and while others cannot stop him from using it, he has no power to stop them. Some few inventions may be practised in secret, but most inventions, if used at all, leave some tangible evidence, which, in spite of all the safeguards that may be devised, are liable sooner or later to be discovered or betrayed. Under such circumstances there would be poor encouragement to invent, and those who do invent must try to keep their inventions with profound secrecy. Some have succeeded in so doing and let valuable inventions die with themselves. Without protection, those who conceive of inventions will not work them out, and thus the public is deprived of the advantages.

Such was the state of affairs relating to inventions when this country was first settled, but even then men were keen enough to see that the public at large would be greatly benefited by taking steps to encourage and stimulate inventions. In fact, nearly every nation in the world has given some encouragement and provided some protection for inventions. Even the North American Indians, it is said, honored the maker of arrow-heads; they always gave him a hearty welcome and at all times gave him free passage through the country, as he carried his stone implements about for sale or exchange. With a view to encourage invention, many of our states in the colonial days, by special acts, from time to time, granted patents to various inventors. The late Senator Wadleigh of New Hampshire is authority for the statement that it is generally believed that the first patent ever issued to an inventor in America was granted in 1646, by the General Court of the colony of Massachusetts Bay, to Joseph Jencks, for an improvement in scythes. The improvement changed the short, thick, straight English scythe into the longer, thinner, curved implement with stiffened back, substantially the same as that in use at the present day.

In 1652, the General Court of Massachusetts allowed John Clark ten shillings for three years from every family who should use his invention for sawing wood and warming houses at little cost. After a trial for this period he was granted the



United States Patent Office, Washington, D. C.

same privilege during his life. This is the earliest record I have found of a royalty or license fee.

In the printed statutes of Connecticut, in 1672:

"It is ordered that there shall be no monopolies granted or allowed amongst us, but of such new inventions as shall be judged profitable to the country and for such time as the general court shall judge meet."

The earliest Connecticut patent found on record was granted in October, 1717, to Edward Hinman of Stratford, for the exclusive right and liberty of making molasses from the stalks of Indian corn, in Fairfield County, for ten years, which grant ended with the words:

"Always provided the said Hinman make as good molasses, and make it as cheap, as comes from the West Indies."

Like many of these colonial patents, this grant covered the practice of the art by any and all processes, without being restricted to the particular process practised by the petitioner.

Such patents were granted for the right to make steel, to make salt, to make glass, to utilize the tide for mills, and for the practice of many other arts. Iron and silk were the subjects of much legislation. An application for a patent for the exclusive use of the steam-engine for factory purposes was refused in 1786. Other patents were more limited; for example, a patent to the inventor of a clock "that winds itself up by the help of the air, and will continue to do so without aid or assistance until the component parts thereof are destroyed by friction," was limited to the privilege of making and vending said *kinds* of clocks. Instead of an exclusive right to make and sell, bounties or premiums were sometimes offered. Sometimes the petitioner was allowed to raise money by lottery; and in one instance an unfortunate inventor who had been convicted of altering bills of public credit was restored to his forfeited liberties for having invented "a method of grinding and polishing crystals and other stones of great value, all of the growth of this colony." [1]

The constitution of the United States gives Congress the power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Our present system has its foundation in this single clause of the constitution. Says Senator Platt in his speech upon the reorganization of the Patent Office:

[1] Those who may be interested in a further study of the Colonial patents of Connecticut will find some fifty pages relating thereto in the Patent Office Reports for the year 1850, page 421.

"When the fathers wrote that clause of the constitution of the United States, they builded better than they knew. They knew, indeed, that the prosperity of every nation must depend largely upon the progress of the useful arts; they knew that if this country was to attain the glory and the power which they hoped for it, it must be along the road of invention; but they could not, the wildest dreamer, the statesman with the most vivid imagination, could never have dreamed, could never have imagined, the blessing, the beneficial results, which would flow and have flowed from the exercise of the power thus granted to Congress."

Thomas Jefferson is said to have been the first to take steps to have Congress exercise the power thus granted, and at his instigation, and under his influence, the patent act of April 10, 1790, was passed, and the first American patent system was founded. The President, the Secretary of State, and the Attorney-General were the persons to examine appliations under this act; and they performed their duties with great care and rigidity, refusing many applications. The first patent granted under this act, the same being the first United States patent, was dated July 1, 1790, and was issued to Samuel Hopkins of Vermont, for making pot and pearl ashes.

On December 15, 1836, the building occupied by the Patent Office was burned, leaving no records of early patents in existence, other than a mere list. In the early reports, the full residence of the patentees was not given. Only three patents were issued during the entire year of 1790; thirty-three were issued in 1791, eleven in 1792, and prior to February 24, 1793, twenty more, making in all sixty-seven patents issued under our first patent law. A new law was passed in 1793, which practically did away with all examination as to merits and novelty, and every one who paid the necessary fees received a patent. Under the act of 1790, the total of the government fees on a patent containing a thousand words was only $4.70. Under the act of 1793, the fee was raised to $30.00 in all cases. 11,348 patents were granted under this act, some of which were the most important inventions of the age. The first United States patent ever issued to a citizen of Connecticut was granted January 15, 1796, to Jared Byington, for an improvement in making nails. Daniel Byington of Wolcott, was a noted mechanic and a skilled inventor. He had a son Jared, who, judging from the record of his baptism, was about thirty years of age at the date of this patent. There is a strong probability that this Jared is the patentee in question and that he had removed from Wolcott prior to that time. Where he resided I have been unable to learn. I cannot find that the manufacture of nails was carried on anywhere in Connecticut at that early day, except at the forge of the village blacksmith, and in the workroom at Newgate prison, where a large number of men were so employed. In May, 1776, an act for the encouragement of manufacturing nails, by paying a bounty per pound upon all made, passed one branch of the General Court of Connecticut, but was killed in the upper house. As early as 1791, a United States patent was granted for a machine for making nails.

The law of 1793 provided for an interference trial, to determine which of two or more applicants was the first inventor; the first interference under this act was in connection with "a machine to work in a current of water," and terminated by the granting of a patent to John Clark, December 31, 1793. The present system of the examination of applications for patents, and substantially the present law, was passed July 4, 1836. The present system of numbering patents began with No. 1, for the first patent issued in July, 1836, after the reorganization of the Patent Office under this act, and continuing consecutively to the present time (December 2, 1890), has reached 442,090. Adding this number to the 11,405 issued prior to 1836, we have 453,505 as the total number of United States patents ever issued. This does not include re-issues, designs, trademarks, and labels, each of which have their own numbers. In 1836, the Commissioner of Patents, a chief clerk, a machinist, and a messenger, constituted the entire force of the Patent Office; in all, eight persons. The present force of the Patent Office aggregates 590 persons, and even this number of employees is in-

sufficient to discharge the work of the office promptly.

In the last half of the year 1836, only ninety-seven patents were granted. In the first half of the year 1890, 10,713 patents were issued, which is over 111 times as many as in the same time in 1836. During the year ending July 1, 1890, 20,682 patents were issued, which is more by several hundreds than the entire issue of patents for a period of sixty-one years after the establishment of the Patent Office.[1]

The question of most general interest under the present law is that of patentability. What is patentable? It is difficult to give a definite answer to the question, or to give a rule, standard, or unerring test, by which one can always tell surely whether a certain device is patentable. Able lawyers, judges, and experts, who have spent a lifetime in studying patent law and patents, come to different conclusions as to the patentability of certain devices. There are cases where we can surely say a device is patentable if new, or that it is not patentable; but other cases come so near the border line between that which is patentable and not patentable, that two persons of great skill and experience in patent matters may honestly entertain opposite opinions. It is no easy task to say what is patentable. Even the issue of a patent does not conclusively prove that the subject matter patented is patentable. The only section of the law which relates to patentability is as follows:

"SECTION 4886. Any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law and other due proceedings had, obtain a patent therefor."

The reader might be referred to this section of the law for an answer to the question, for it is, in connection with the explanations thereof as given by the courts, all the answer that there is. Let attention be directed in detail to the language of this section. As to who may obtain a patent, the language is the broadest that can be framed. It is as broad as the "every one" in the Scriptural invitation to them that thirst. The conditions of the act being fulfilled, a patent may be obtained by "any person" without qualification; male or female, old or young, black, white or red, citizen or alien, a resident of this or any country, — all these are included, and none are excluded. If two or more persons jointly fulfil the conditions of this section, they are entitled to receive a joint patent, because each applicant comes under the term "any person who," with others, has fulfilled these conditions.

The first requisite of patentability under this section is that one shall have "invented or discovered" something, then comes the question, What is it to invent or discover? Invention is making known that which was not known before; at least, not known to the inventor. It must originate with him; otherwise, it is not invention. He may have spent years of study and thought before he could so comprehend the matter as to make it known, or he may have discovered it by accident or in the twinkling of the eye. In either case it is invention or discovery. If a thing is actually discovered without thought or study, it might be said that the discoverer did not actually invent it; but even then it is probable that if another person had desired to know, and to make known, the same thing, he might have first studied over it for years; and therefore to make an unknown thing known is something that might have required the exercise of invention, and if so that thing has been invented or discovered within the meaning of this law. Invention and discovery are therefore considered synonymous. There may be a slight distinction between them, but it is immaterial.

The second requisite of patentability, is that the thing invented shall be "new and useful." A thing is new if not before known. It must at least be new with the inventor. "New and useful," when considered by itself, implies that it must be

[1] For a general history of the Patent Office from 1790 up to the date of the fire in September, 1877, the reader is referred to the O. G. of October 9, 1877, Vol. 12, page 589.

new to all the world, but what the statute means by new is explained further on in connection with special requirements as to novelty, and therefore need not be considered here. A thing to be patentable must be useful, in the sense that it is capable of a useful purpose. It may be no better than that which existed before; if it is useful as opposed to harmful, the law is satisfied. Utility has a bearing on the question of novelty and invention. A change, to be novel, must be a substantial and material one, — a change that produces some useful result or function. If a material advantage is derived from a certain change, the presumption is that others would have made that change before and reaped that advantage, were it not for the fact that invention was required to make the thing known, and therefore we call the thing new. This presumption of invention and novelty cannot arise from the production of a change by which no advantage can be reaped.

The third requisite of patentability relates to the subject matter invented. The subject may be any "art, machine, manufacture or composition of matter." The term art relates to the manner of doing certain acts, the process or mode by which anything is made. A process may be worked out by machinery, but the mere operation of a machine is not a true art, process, or method. A machine is a device for performing work of some kind, and it generally consists of moving parts. A "manufacture" is any finished article, or one so nearly finished as to be the subject of sale for some useful purpose. This term is confined to the article itself, with reference to some utility, and does not apply to the mere shape or ornamentation of an article which has no useful function. Shape, without function, is a proper subject for a design patent, and is therefore excluded from protection under this section of the statute. A "composition of matter" is a medical or chemical compound, or any compound of two or more ingredients. Anything to be patentable must come under one or the other of these four heads or classes, — art, machine, manufacture, or composition of matter; or else it must be some new and useful improvement thereof. The phrase "improvement" in this connection only serves to make it clear that one may receive a patent for all that he invents; whether it be a thing of a kind never known before, a thing which is new from beginning to end, or merely a new and useful change of, or addition to, something which was before known. The subject matter of every patent now issued is called an "improvement" in the grant, but the words as thus used do not necessarily imply that the invention is an improvement upon some prior invention of the same class.

The fourth requisite of patentability is that the subject matter invented shall not, before the applicant's invention, have been "known or used by others in this country." This is the first special provision as to novelty. Known and used, in this connection, are practically synonymous. Anything which is not completed so as to be capable of use cannot fairly be said to be known. If it has not been tried or used, it may result only in failure. When, however, a thing has been used, and has been found to answer the purpose for which it was made, the thing is then known to all who have used it or seen it used, but it cannot be practically known until it has been used. It is immaterial how small a number of persons may have the knowledge of prior use; if known to only a single person other than the inventor, and if no special pains are taken to prevent others from knowing the same, it is known to the world in the eye of the law. This prior knowledge or use, in order to defeat a patent, the statute says must be "in this country," and therefore it is immaterial what has been known and used abroad, provided the home inventor did not know of that foreign use and was thus a real inventor.

The fifth requisite of patentability is that the subject matter invented shall not have been "patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof." This is the second and last special provision as to novelty. It will be noticed that this requisite includes foreign countries, so that a prior patent or printed publication in any country is a bar to a patent. It is not enough, how-

ever, that a thing may be shown in the drawing of a prior patent, or described in the specification, in order to be patented. It is patented only when it is either in whole or in part the subject matter that is set forth in a patent as the invention of the patentee. If, however, such patent is printed, it becomes a printed publication, and then matter which is described therein is a bar to a patent. In order to defeat a patent or application by a prior printed publication, the subject matter of that patent must be *described*, not merely shown in such prior publication; but such description may refer to a drawing, and if the two taken together show the subject matter of a patent or application, the description will be considered sufficient to defeat it. There must, however, be a description of some kind in a printed publication, in order to make said publication a bar to a patent.

The sixth requisite of patentability is that the subject matter shall not have been in "public use or on sale for more than two years prior to this application." If a thing is used, as things of its class are ordinarily used, and without special concealment, it is in public use. A mere test of a thing is not public use; but if, after such use as is necessary to test its working, the use is continued, it is public use. It is immaterial how limited the use may be, or how small a portion of the public may actually know of such use. A thing is on sale when it is offered for sale, no matter whether it is actually sold or not. We have already referred to prior use, but the limit in that case was only that such use must not be before the applicant's invention, and had no reference to the application, or to any use that was subsequent to the invention. An applicant may have invented a device ten or twenty years prior to his application, so far as prior use is concerned; but if the applicant or any one else, either with or without the applicant's knowledge or consent, uses a device for more than two years before application for a patent, a valid patent cannot be obtained therefor. A use prior to the applicant's invention is expressly limited to this country, and therefore the two years' public use and sale, which may be subsequent to the invention, is also understood to relate only to this country.

The seventh requisite of patentability is that the invention is not "proved to have been abandoned." Abandonment can be proved only by the declarations or acts of the inventor, and the proof must be clear. A man can give his invention away if he pleases, but unless he expressly declares, either by words or acts, that he has given it up, or that he never intends to do anything more with it, or words to that effect, it is a hard matter to prove abandonment.

Lastly, this section provides for the payment of fees and other matters of form, which can be easily complied with and need not be here discussed.

We have now considered the whole law of patentability; and if the reader do not understand it he need not be discouraged. Probably, language cannot be framed to affirmatively state what may be patentable. Volumes have been written on the subject, but they are largely devoted to telling what is not patentable instead of what is. In fact, the law itself, as we have already seen, is largely made up of negative conditions. In giving rules even to what is not patentable, the matter is further complicated by certain exceptions to those rules. One great difficulty in regard to this question is want of uniformity in the matter to be considered. Unless nearly the exact thing is found to be old, every case is practically a new one and different in some respects from any other, and to judge it correctly and properly apply to it the rules of law, requires the nicest discrimination and the most careful judgment.

In order to obtain a patent, the applicant must make application therefor in writing to the Commissioner of Patents. This writing is called the petition. He must also file a written description. This description is called the specification. It must be so full and clear as to enable one skilled in the art or science to which it appertains to make, construct, compound and use the same. The reason for this requirement is twofold: first, to know how to construe the patent in case of alleged infringement; and second,

that the public may have the benefit of the invention after the patent has expired. In fact, a patent is a contract between the inventor and the government, the latter giving the inventor, for a limited time, the exclusive right to make, to use, and to sell his invention, upon the condition that the inventor gives that same right to the public at the expiration of his patent. In order to make sure that the public shall have this right, the law requires this full and complete disclosure of the invention by a written specification, before the patent can be issued. The law also requires that the specification shall particularly point out and distinctly claim the part, improvement, or combination which the applicant claims as his invention. The clause or clauses which thus point out the invention are called the claims.

When the nature of the case admits of illustration by drawings, the applicant is required to furnish one drawing on cardboard, ten by fifteen inches in size, while the Patent Office furnishes a copy thereof to be attached to the patent. The drawings are copied by the photolithographic process, and they must, therefore, be made in exact accordance with a long list of requirements. In fact, no one but an experienced artist can make a drawing that comes up to the high standard now required by the Office.

The applicant is also required to make oath or affirmation as to his residence, what country he is a citizen of; that he verily believes himself to be the original, first, and sole inventor of the matter claimed in the specification, or if there be more than one applicant, that they are joint inventors; that it has not been patented to his knowledge in any country, or in no country except those named in the oath; that it has not been in public use or on sale in the United States for more than two years prior to his application; and that he does not know, and does not believe, that it was ever known or used prior to his invention.

The applicant shall also furnish a model, "if required by the Commissioner," but the Commissioner requires models only in very few instances. This dispensing with models has been a great saving to inventors, because they can have their applications prepared from full-sized machines or articles. It has also worked much injury to inventors, as they have had applications prepared from rough sketches before making any machine or article, and oftentimes when they had only crude ideas of what they had invented. The result has been many worthless patents. Oftentimes when the patentee comes to embody the invention in a machine or article, he finds, to his sorrow, that he has so changed the construction that another patent must be taken out to cover the improved device. Sometimes the change is so great that not a single feature remains that is covered by the patent. And worse than all, sometimes the change is not quite so sweeping and the completed thing partially resembles the patent, but not closely enough to be clearly within the claims thereof; while, at the same time, the patent discloses just enough to prevent getting adequate protection by a new patent. Such a patent is positively worse than no patent at all, but it is no more than what may be expected in trying to patent a thing which never existed except on paper.

The application being prepared, when it is sent to Washington, the financial clerk will see that the first Government fee of fifteen dollars is paid, and the application clerk will see that all the formalities as to signatures and the oath have been complied with. The draughtsman will examine the drawing, to see if it is made in conformity with the rules, and if so, he will stamp it "O. K." A receipt is then forwarded to the applicant, stating that the papers have been duly filed and that "your application for a patent will be taken up for examination in its order." The last three words are very significant, and mean that the case will be reached for examination perhaps inside of a month, perhaps, in five or six months, according to which one of the six hundred and eighty-eight classes, or the four thousand and over sub-classes, the invention may belong to. The examination of these applications is divided among thirty principal examiners, stationed in as many different rooms; the principal examiner being chief of the room and responsible for the

work of his assistants. They consist of a first, second, third, and fourth assistant examiner and several clerks.

The first step in the examination of an application is to determine whether it is in all respects in proper form, and if so, the case will be examined on its merits. In matters of form, some examiners are very exacting and almost whimsical; while others pay but little attention to form, and turn their whole attention to matters of substance. As a general rule, those who are not too exacting in matters of form are the best examiners. In examining a case upon its merits, the drawings of all prior patents in the class to which the invention belongs, and oftentimes the patents in other classes, when there is a probability that there may be any analogy, are examined. Not only prior United States patents, but the prior patents of all countries, and also the printed publications in the Office Library are examined. While the examinations are largely made by the aid of drawings, the accompanying descriptions are read whenever there is any obscurity in the drawing, or when there is a probability that said description may reveal something not illustrated by the drawing. By practice and experience, the examiners become very expert in reading drawings, and can detect almost at a glance anything that has an analogy to the case which they are considering. These examinations are generally very thorough, and it is extremely seldom that a prior patent or publication is overlooked. Such cases do sometimes occur, but not so often as we might expect, when we consider the difficult task of making such an examination in the limited time at the command of the examiners. The result of the examination is communicated to the applicant or his attorney, and in the great majority of cases consists of a rejection or partial rejection of the application, with the reason therefor and such information and references as may be useful to the applicant in the further prosecution of his case. The applicant then has a right to another examination without change in his application, or he may change the same in such manner as to remove the objections. The examination is made with more particular reference to what the applicant claims than it is to what he shows. Thus the examiner may oftentimes reject an application upon reference to a patent, the substance of which the examiner considers to be entirely different from the applicant's invention, because the examiner considers the claim to be so worded that it may be said to describe the device shown in the prior patent as well as it does the applicant's invention. An objection by reason of such a reference is overcome by changing the wording of the applicant's claim, so that it particularly points out those features that are different from those shown in the patent cited. Oftentimes the change of one or two words in a claim will cause the examiner to allow it, when he otherwise would not. In fact, the science of soliciting patents consists largely in perceiving how little change may be sufficient to overcome an objection. Great skill is required to so word a claim that it shall clearly identify the invention and separate it from all prior ones, and at the same time make the claim as broad as the invention. One of the most common errors of patent solicitors and inventors, in amending a claim to avoid an objection, is to impose on the claim more limitations and restrictions than are necessary to overcome the objection.

This is a good place, perhaps, to correct a common error. Many suppose that the grant of a patent is proof that the subject matter does not infringe upon any prior patent, or, in other words, that obtaining a patent gives one a right to manufacture the patented article without being accountable to any prior patent. This is not the case. The office makes no examination whatever for the purpose of ascertaining whether the device which an applicant shows and describes infringes on any other patent or not. In fact, this is none of its business. In making the examination, the examiners do not even read the claim of a prior patent, unless it is for the purpose of a better understanding of what is shown and described in said patent. The only claim which concerns the Patent Office is the claim of the applicant, and the examination is made to see if the applicant

claims matter which is made the subject of any prior patent, or which is described in any printed publication. If an applicant claims such matter, his claim must be rejected, because it is thereby barred from a patent under the clause relating to patentability, which I have before considered. I have already alluded to the difficulty of deciding the question of patentability, and this is a matter which the examiner has to decide. He must consider it in all its bearings, not only with reference to novelty, but, supposing some novelty is shown, he must then decide whether that novelty is such as results from invention, or whether it is merely the expected skill of a mechanic. One of the most difficult questions in deciding patentability is that of distinguishing between mechanical skill and invention. A thing which is better than another and is also new only by reason of mechanical skill is not patentable, because that which results from mechanical skill alone is neither invention nor discovery.

In 1836, Senator Ruggles, as chairman of the Committee on Patents, gave his view of the qualifications of a good examiner as follows:

"It is his business to make himself fully acquainted with the principles of the invention for which a patent is sought, and to make a thorough investigation of all that has been before known or invented, either in Europe or America, on the particular subject presented for his examination. He must ascertain how far the invention interferes in any of its parts with previous inventions or things previously in use. He must point out and describe the extent of such collision and interference, that the applicant may have the benefit of the information in so shaping or restricting his claim of originality as not to trespass upon the rights of others. . . . An efficient and just discharge of the duties, it is obvious, requires extensive scientific attainments, and a general knowledge of the arts, manufactures, and the mechanism used in every branch of business in which improvements are sought to be patented, and of the principles embraced in the ten thousand inventions patented in the United States, and of the thirty thousand patented in Europe. He must moreover possess a familiar knowledge of the statute and common law on the subject, and the judicial decisions both in England and our own country, in patent cases."

The same qualifications of an examiner are required to-day; but instead of having to examine only ten thousand inventions patented in the United States, he has to examine nearly four hundred and fifty thousand such patents, and also a very much larger number of foreign patents than he did in 1836. Commissioner Foote said, in 1868:

"Questions as to the patentability of inventions become more difficult with the increase in the number of previous devices. An examiner must familiarize himself with all the inventions that have been made in his class, not only in this country, but in Europe. Their great number and complexity have rendered the study of them a profession to be acquired by years of labor. An examiner's decision involves nice questions of law, of science, and of mechanics, The more recondite principles upon which depend the practical success of processes and machinery must be familiar to him. Large amounts of property often depend directly or indirectly upon his action. The ability and acquirements necessary to the proper discharge of his duties must be of a high order, scarcely less than those we expect in a judge of the higher courts of law."

And yet before 1848 a primary or principal examiner was paid a salary of $2500 a year, and from that time to the present his salary has been $2400. The salaries of the assistants is much less. If we ever feel disposed to find fault with the work of these examiners, we should bear in mind that their pay is out of all proportion to the work required of them, and that more work is forced upon them than they can attend to promptly and efficiently. Notwithstanding all the difficulties under which an examiner labors, I may say that the inventors fail to receive ample protection in their patents through the fault of their solicitors at least nine times as often as they do through the fault of the examiner. If the solicitor, in the first place, does not draw a claim so as to properly protect the invention, the examiner has no power to correct the mistake; no matter how many unnecessary restrictions are in the claim, or how many other claims might properly have been made, the examiner can only reject or allow the claims which are presented to him. On the other hand, if the examiner attempts to impose unnecessary restrictions, or rejects the case improperly, the solicitor has every opportunity to reply and to correct the error of the examiner. If he does not do so, the fault is the solicitor's, rather than solely the examiner's. There being

thirty principal examiners, and consequently thirty different chiefs of the examining corps, we have as many different rulings. This is necessarily the case, for on questions of nice distinction the honest judgment of different men will differ. In 1871, Commissioner Leggett said:

"It is very difficult to establish any rule as to references that shall be plain and of universal application; consequently, there are almost as many different rules of practice in finding references and making rejections as there are different examiners in the office. Some examiners are very quick to detect resemblances, and will reject almost everything. Others are equally quick at finding differences, and will grant patents on mere shades of variation. Hence, a picket-fence is rejected on reference to a comb; . . . surgical instruments for injecting spray into the throat or nasal organs, on reference to a fireman's hose; a rubber packing for fruit-jars, on reference to a pump; a device for lacing ladies' shoes without the use of holes or eyelets, on reference to an old mode of cording bedsteads; an ore-crusher, on reference to a nut-cracker. In each of these cases there will be found a remote resemblance between the device in the application and the reference. In some of them, however, the examiners have displayed more inventive genius in finding the references than the applicants would dare claim for their devices."

In many cases the examiners' letters read as if the examiner were acting under a law for the discouragement of useful inventions. The facts of a case are oftentimes misstated, or couched in unusual language, in order to bring the applicant's device more closely into analogy with the objections. In fact, the examiner's position is oftentimes so earnestly contested by the attorneys, that unless the examiner is very careful he will find himself acting merely as an opponent to an application, apparently forgetting that he is sitting as a judge to see that justice is done, both to the public and to the inventor. It may be given as a general rule that where an examiner's letter shows the exercise of much thought, study, and invention, in order to throw an obstacle in the way of granting an application, that the subject matter of that application is patentable. The applicant is entitled to two rejections of each claim upon the same state of facts, but oftentimes new references are given, and these entitle the applicant to another action, and in this way sometimes a dozen or more letters are written by the examiner before the case is disposed of. The applicant can reply to these letters at any time within two years, and in this way he may, if he elects, keep his application in the office for many years.

The greatest hardship that poor inventors suffer, under the unjust action of the examiner, is when a case is wrongfully rejected and they cannot well bear the expense of an appeal. Upon the payment of a government fee of ten dollars (and when a solicitor is employed, considerably more than that, for conducting the case), the applicant has a right of an appeal to the examiners-in-chief. This board of appeal consists of three examiners, whose only business is the consideration of appealed cases. A popular error is in styling them the examiner-in-chief, or the chief-examiner, as if the board consisted of only one person instead of three. The same mistake is often made concerning the title of primary examiner; he is called *the* principal examiner of the Patent Office, as if he were one above all others, instead of being one of an equal grade with thirty principal examiners.

Upon an adverse action of the examiners-in-chief, the applicant has a right to appeal to the commissioner in person, and from his decision an appeal is had to the Supreme Court of the District of Columbia.

The practice in design patents is substantially the same as in mechanical patents; it differs therefrom mainly in the subject matter to which the patents relate. A design patent is confined to ornamentation or such matters as appeal solely to the eye, while machines and all matters relating to function or mode of operation are expressly excluded under the statute.

The extension of patents is a thing of the past. An extension gives life to a patent for a new term of years. Prior to March, 1861, the term of all patents was fourteen years. The law was then changed, making the life of a patent seventeen years, with a provision that no patent issued after that date should ever be extended, and no patent issued since then has ever been extended.

A reissue of a patent is often con-

founded with an extension. A reissue has no effect whatever on the term of a patent. It expires at the end of seventeen years from the date of the original patent. A reissue only changes the description and claims of the original patent. The drawing may be considered as a part of this description. In making these changes the applicant is confined to the subject matter which constituted the invention in the original patent. A reissue for the purpose of narrowing the claim, or for omitting one of the claims, is proper at any time, but under the recent rulings of the courts a reissue for the purpose of broadening the claim or claims must be made very soon after the issue of the original patent, if at all; otherwise, the reissue will be void. In view of these recent decisions it is of the utmost importance that the original patent should be taken out with great care. We have already considered the importance of having the invention reduced by a machine or model to a tangible form before the making of an application. In addition to this, it is of great importance that the inventor shall disclose to his solicitor all facts that he can relative to his invention. He should as nearly as possible tell him exactly how much of the device he knows to be old, and what he supposes to be new. He should point out with minuteness all the advantages which are derived from his invention, or which are supposed to be derived therefrom, and in doing so he should carefully distinguish between the advantages which are peculiar to his invention and those which it has in common with prior devices. He should also inform the solicitor of the various modifications or changes in the invention which have occurred to him or which he can devise. Having done this, it is the duty of the solicitor to put the case into proper form, and upon him lies the responsibility of a good patent. If the applicant fails to give the solicitor such information as he possesses, an imperfect patent will be largely the fault of the inventor. The writer has known many patents to be more or less faulty simply through the neglect of the inventor to tell the solicitor of the real facts in the case, and facts that he well knew.

Trade-marks and labels are registered in the Patent Office under certain conditions, but they are not patents, and for that reason will not be discussed in this paper.

The amount of the balance in the Treasury of the United States to the credit of the patent fund, in January, 1890, was nearly four million dollars. The Patent Office is the only branch of the Government from which any profit is derived, the only branch that pays its own way; and yet Congress has always pursued a niggardly policy towards this most useful, important, and prosperous of its children. For more than forty years past the annual reports of the Patent Office have contained urgent appeals to Congress for more room, more help, and more money, yet inventors in some classes have often had to wait for from twelve to fifteen months, or more, before their applications could be reached for examination. In the report for the year 1847 one of the examiners says:

"The genius, energy, and patient perseverance of the inventor in the noble work of improvement, in those arts which minister to the necessities, the conveniences, and the enjoyments of man, have far outstripped the tardy foot of legislation, and have transcended the limits of legislative provisions for their protection."

In 1884, Hon. O. H. Platt, one of the warmest, the truest, and most earnest friends of the American mechanic and inventor, said in his speech in the United States Senate, after quoting from the reports of several Commissioners:

"The quotations which I have made from former Commissioners and the letter of the present Commissioner are but the echo of every Commissioner of Patents, from the commencement of the Office down to the present time. The universal cry has been for more room, for more force, for room and force to enable the Office to keep up with its constantly increasing business. It has been more than a cry, it has been a wail. The Office is shamefully and almost criminally limited and cramped for room. I undertake to say that if there were tenement-houses in the city of Washington crowded as the rooms in the Patent Office are crowded, there would be one universal cry of indignation going up, not only from the press of this city, but the press of the whole country. Yet in the Patent Office it goes on and nobody objects. The space which is allotted to the clerical employees of the Patent Office may be large enough for a dungeon, it may be large enough for a tomb, and it may be a little too

large for a grave, but it is not a fit amount of room for a human being to live and do the work of this Government in."

Yet, notwithstanding all this cry for more room and more force, the Office is still in the same condition, and the report of the present Commissioner echoes the plea of every former Commissioner for more force, and for more funds, in order that the inventors of this country may have granted to them such facilities in the Patent Office as those inventors have paid for and do not get. One of the most important inventions in connection with the workings of the Patent Office is that of photolithography. It is, I believe, not the result of a single invention, but like many other inventions which are of the greatest moment to the country, it came little by little as the aggregate result of many inventions. By its aid the Patent Office is enabled to do with the same force nearly double the work that could formerly have been done. In fact, as we look upon it to-day, it would seem almost impossible for the Office to conduct its business at all without the aid of photolithography. For example, look at the Official Gazette, which is sent out every Tuesday, and contains illustrations and the full claims of every patent issued on that Tuesday, for the current week, the number of which frequently exceeds five hundred. This requires over one hundred and fifty pages. When considered with reference to the amount and character of the labor bestowed upon it, and the promptness with which it is issued, I believe that it is not equalled by any other publication in the world, and yet it is sold at five dollars a year. One can obtain a single copy for any week for ten cents. What a contrast is this to twenty-five years ago. At that time the only printed record of patents that was sent from the Patent Office was the much ridiculed Patent Office Reports issued only once a year, and then not until the patents which they illustrated were two or three years old. The illustrations were engravings or woodcuts, closely crowded together in a volume or volumes by themselves, while the claims were printed in other volumes. The first illustrations appear in the report for 1853, in which a part only of the patents were illustrated by white lines on a black ground, the cuts accompanying the text. The reports for 1849, '50, '51, and '52 contained the claims only, and prior to that time we have nothing but a mere list of patents issued, with reports of the various examiners, who sometimes made mention of what they considered the most important inventions of the patents issued during the year.

Photolithography has wrought numerous other changes in the practice of the Patent Office. Formerly, the examiners had to make their examinations from a single set of the original drawings, and if more than one examiner wished at the same time to consult the drawings of any particular class, one of them would have to defer his work until the other was through with them. Now, every examiner has in his own room a photolithographic copy of all such patented drawings as he may often have occasion to examine. Other sets are kept in the draughtsman's room, where attorneys and others may have access to them. The original drawings are carefully filed away where they can be examined when necessary, but where they will be preserved from being worn out and destroyed by constant wear and use such as they were formerly subjected to. Then in the matter of copies, — the specifications are printed of all patents issued since 1866, and all of the drawings have been photolithographed, so that in less than three days' time one can obtain any copy of these patents for the sum of ten cents. In 1866, the only way to obtain a copy of a patent in the Office was to have the drawing traced by hand and a manuscript copy made of the specification. It would take from one to six weeks to obtain one of these copies, and the expense was considerable. A dollar and a half was about the smallest cost for a copy of any patent, while copies requiring more drawing and longer specifications greatly exceeded this cost. The writer has paid thirty-eight dollars for a copy of a patent which now can be obtained for ten cents. Notwithstanding this low price for these copies, the Patent Office derives a substantial profit from its sales. Twenty-five years ago the draw-

ings for an application were made on a sheet of paper fifteen by twenty inches square. Instead of being all line work and jet black, brush shading, and all the colors of the rainbow were permissible. It was a common practice to show different materials in different colors; for instance, the steel was colored blue, brass, and wood were represented yellow, and if certain parts were shown in more than one position in one figure of a drawing, one of these positions was represented in red. Instead of requiring only one drawing, as at present, the applicant was required to furnish a copy of his drawing on tracing muslin, the latter to be attached to his patent when issued. The specification, instead of being printed, was in manuscript, on paper of the same size as the drawing, namely, — fifteen by twenty inches, making quite a cumbersome document, which was very inconvenient to carry or examine. Commissioner Theaker commenced printing the specifications November 20, 1866, and at the same time reduced the size of patents and drawings from fifteen by twenty to ten by fifteen. The copy of the drawing in tracing muslin to be attached to the patent was still required. In June, 1869, the Patent Office, under Commissioner Fisher, commenced photolithographing drawings of all patents, after which the applicant was not required to furnish a copy of his drawing other than the original, the copy for attachment to the patent being furnished by the Office without expense to the applicant. This change necessitated the abolishing of all colors, except black from the original drawings; but the inventor's name and the title of the invention the applicant placed upon the head of each sheet of his drawings, and all the fancy work both in color and design that the draughtsman could conceive of was lavishly bestowed upon this lettering. In the month of May, 1871, the Office still further reduced the size of patents, and the drawing attached thereto, from ten by fifteen inches to eight by eleven and one half inches. This size has been continued until the present time. The original drawings are still made on a sheet ten by fifteen inches in size, which are reduced by photolithography to the size of the present patent. About the time of thus reducing the size of the patent, the applicant was debarred the privilege of putting the fancy lettering upon his drawing and compelled to leave it blank, so that the Office might fill in the title and inventor's name with a uniform style of type. Another important improvement resulting from photolithographing is the furnishing of complete copies of the drawings and specifications to public libraries, so that inventors all over the United States can have ready access to them.

In January, 1869, Commissioner Foote commenced publishing a weekly list of claims, which was furnished to subscribers at the rate of $5 per annum. Soon after, Commissioner Fisher added to this list a pamphlet containing Commissioners' decisions which was issued at intervals of from one to two months. These were furnished without further expense to all subscribers for the weekly list of claims. These claims were stereotyped, so that at the close of the year they could be printed in the annual report, but they were not illustrated. Commissioner Fisher advised the discontinuance of the publication of the annual report; and the joint resolution of Congress, dated January 11, 1871, abolished the old form of annual reports. At that time the reports for 1869 had not been published, and the appropriations for the same expired July 1, 1869. It was soon found that the abolishment of these reports was a mistake, and as a substitute therefor Commissioner Leggett commenced the publication of the present *Official Gazette*, containing illustrations of all the patents each week, and they have been published continually since that time. The *Gazette* is such a great improvement over the old annual reports that we are glad those were abolished, for if they had not been abolished, under a mistaken idea and by an under estimate of their value, we never should have had the present *Official Gazette*.

The Patent Office was never before in so good a condition as it is to-day, and all this has come not from being a favored child of the government and the recipient of lavish support, but it has come

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in spite of neglect and abuse. The office can spend from its own earnings only so much as Congress may be pleased to give it, and in fact it has not even been credited with all of its own earnings. The Patent Commissioner formerly had charge of the Department of Agriculture, and the entire expenses of that department were paid by the Patent Office for a period of twenty-five years. Says Senator Platt:

"The Agricultural Department is the daughter of the Patent Office; but we have taken the daughter away from her mother; we have built her a fine house and furnished elegant surroundings; we have given her costly and fashionable clothing; we pet, I will not say pamper her; we pay her every possible attention, while the old lady, her foster mother, still scrubs along in the kitchen of the Interior Department, and is never noticed except when she deposits the surplus of her daily earnings in the Treasury for the benefit of the rest of the family. It is a shame, and the inventors are beginning to regard it as a shame, and they are going to be heard in their demand that the Patent Office shall receive better treatment than it has received."

That demand has been made by every commissioner, for more than fifty years. At the same time, every effort has been made to make the most of the facilities at hand, until the Patent Office has been brought into as good a condition as possible so long as it cannot use its own money without the permission of Congress. Formerly, inventors had to wait from twelve to fifteen months, and in some classes even eighteen months, before their applications were reached for examination. Now there is not a room in the Patent Office that is six months behind in its work. This condition has not been brought about by reason of a decrease in the number of applications or in the number of patents issued, nor by having more help, more room, or more money; it was done in spite of a great increase in the number of applications, and with the same help, the same room, and the same amount of money as heretofore. In 1888, 20,420 patents were issued. In 1889, there were 24,158 an increase of almost one-fifth. The weekly issue of patents in 1888 was a little less than four hundred. It is now more than five hundred almost every week.

While our patent system is not what it would be with better facilities, we may point with pride to the fact that even in its crippled condition we have the best and most perfect patent system of any country in the world.

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